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Yunchangia, a new genus of smut fungi (*Ustilaginaceae*) from China

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Abstract —*Yunchangia puccinelliae* gen. et sp. nov. on *Puccinellia glauca*, is described. The fungus was collected from Xinjiang Uygur Autonomous Region, China.

Key words —*Ustilaginomycetidae*, *Ustilaginales*, taxonomy

Introduction

The Taklimakan desert located in the southern Xinjiang Uygur Autonomous Region is the second largest shifting sand desert in the world, covering 337,600 km^2. During a mycological expedition to the margin of the western desert in 2010, a smut species on *Puccinellia glauca* was collected. The sorus of the smut causes a short, longitudinal leaf streak. It is covered by the epidermis and simultaneously contains fungal hyphae and single ustilospores. The fungal hyphae lie longitudinally along the sides of the sorus. Attempts to germinate ustilospores from *Puccinellia glauca* were carried out several times at 24°C on PDA (potato dextrose agar), but failed. To date 269 species of smut fungi have been reported in China (Guo 2000, 2011, He et al. 2011).

Material & methods

Ustilospores and hyphae were mounted in lactophenol and examined by light microscopy (LM), after heating to boiling point. For scanning electron microscopy (SEM), dried ustilospores and hyphae were dusted onto double-sided adhesive tape, fixed on specimen stubs, sputter coated with gold, ca. 20 nm thick, and studied with a FEI Quanta 200 electron microscope.

Taxonomy

Yunchangia L. Guo & B. Xu, **gen. nov.**

Fungal Name FN570049

Differs from *Ustilago* by its sorus simultaneously containing fungal hyphae and ustilospores.

Type species: *Yunchangia puccinelliae* L. Guo & B. Xu

Etymology: The genus is dedicated to Professor Wang Yunchang, an outstanding Chinese mycologist on taxonomy of smut and rust fungi.

Sori on host plant in the *Poaceae* forming short streaks mainly on leaves, covered by the epidermis. Ustilospores single, pigmented. The fungal hyphae lie longitudinally along the sides of the sorus. Hyphae are composed of pigmented cells.

Comments: *Yunchangia* is similar to *Ustilago* (Pers.) Roussel, which differs by absence of fungal hyphae in the sorus (Vánky 2002). Its characters demonstrate that the genus *Yunchangia* is a member of the family *Ustilaginaceae*.

Yunchangia puccinelliae L. Guo & B. Xu, **sp. nov.** Figs 1–6

Fungal Name FN 570050

Differs from *Ustilago striiformis* by its slightly larger ustilospores and with fungal hyphae in sorus.

Type: China, Xinjiang, Wuqia, Baykurt, alt. 2600 m, on *Puccinellia glauca* (Regel) V.I.Krecz. ex Drobow (*Poaceae*), 30.VIII.2010, Y.F. Zhu & L. Guo 231 (HMAS 243467, **holotype;** HMUT 1228, **isotype**).

Etymology: The epithet refers to the host plant genus.

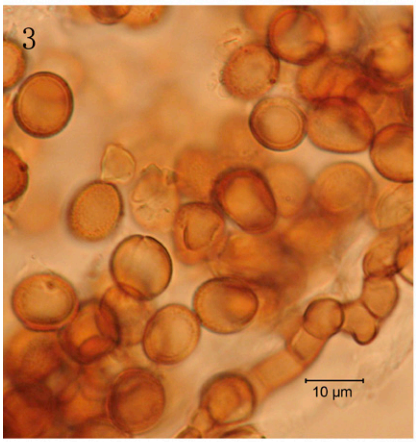
Sori in leaves as short streaks, sparsely in pedicels and inflorescences, 0.5–3.5 mm long, covered by the epidermis which later ruptures exposing powdery, dark brown spore mass. Ustilospores subglobose, ellipsoidal, ovoid or irregular, 9–19 × 7–12.5 μm, reddish brown; wall 0.5–0.8 μm thick, echinulate as seen by LM, finely verruculose between the spines as seen by SEM. Fungal hyphae are composed of cells; cells cylindrical, ovoid or irregular, 5–10.5 × 4–8 μm, reddish brown; wall 0.5–0.8 μm thick, smooth as seen by LM, rough or verruculose as seen by SEM.

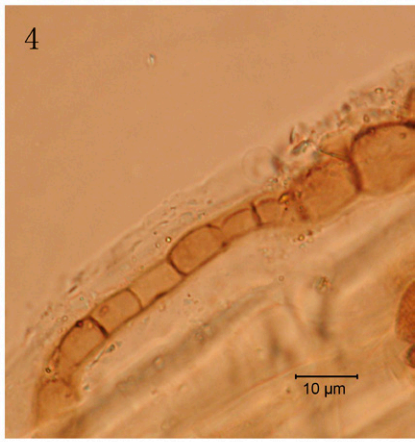
Comments: *Yunchangia puccinelliae* is similar to *Ustilago striiformis* (Westend.) Niessl, which differs by its slightly smaller ustilospores [9–15(–16) × 8–12(–13) μm] and the absence of fungal hyphae in the sorus (Vánky 1994).

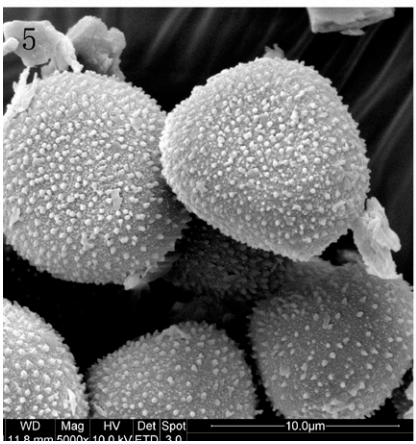
Figs. 1–6. *Yunchangia puccinelliae* (HMAS 243467, holotype). 1. Sori in leaves. 2–4. Ustilospores and fungal hyphae (LM). 5–6. Ustilospores and fungal hyphae (SEM).

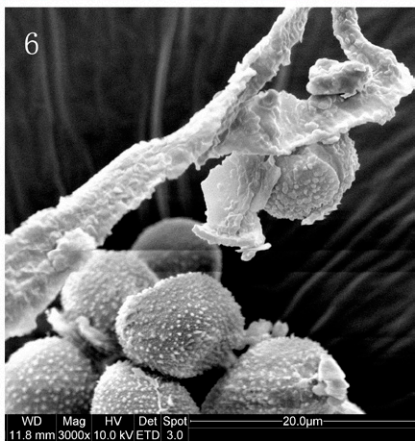
1

2
10 µm


3
10 µm


4
10 µm


5
WD Mag HV Det Spot
11.8 mm 5000x 10.0 kV ETD 3.0
10.0µm


6
WD Mag HV Det Spot
11.8 mm 3000x 10.0 kV ETD 3.0
20.0µm

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